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**TECHNICAL REPORT 2004-008**

**Joint Single Integrated Air Picture (SIAP)  
System Engineering Organization (JSSEO)  
Standard Event Test Plan Template**

**DECEMBER 2004**

**Joint Single Integrated Air Picture (SIAP)  
System Engineering Organization (JSSEO)**

1851 South Bell Street  
Crystal Mall 3, Suite 1188  
Arlington, VA 22202

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Report Documentation Page			Form Approved OMB No. 0704-0188		
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1. REPORT DATE <b>DEC 2004</b>		2. REPORT TYPE <b>Technical Report</b>		3. DATES COVERED <b>00-00-2004 to 00-00-2004</b>	
4. TITLE AND SUBTITLE <b>Joint Single Integrated Air Picture (SIAP) System Engineering Organization (JSSEO) Standard Event Test Plan Template</b>			5a. CONTRACT NUMBER		
			5b. GRANT NUMBER		
			5c. PROGRAM ELEMENT NUMBER		
6. AUTHOR(S)			5d. PROJECT NUMBER		
			5e. TASK NUMBER		
			5f. WORK UNIT NUMBER		
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) <b>Single Integrated Air Picture Joint Program Office (SIAP JPO), 1851 S. Bell Street, Crystal Mall 3, Suite 1188, Arlington, VA, 22202</b>			8. PERFORMING ORGANIZATION REPORT NUMBER <b>TR 2004-008</b>		
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES) <b>Single Integrated Air Picture Joint Program Office (SIAP JPO), 1851 S. Bell Street, Crystal Mall 3, Suite 1188, Arlington, VA, 22202</b>			10. SPONSOR/MONITOR'S ACRONYM(S) <b>SIAP JPO</b>		
			11. SPONSOR/MONITOR'S REPORT NUMBER(S) <b>TR 2004-008</b>		
12. DISTRIBUTION/AVAILABILITY STATEMENT <b>Approved for public release; distribution unlimited</b>					
13. SUPPLEMENTARY NOTES <b>The Joint Single Integrated Air Picture (SIAP) System Engineering Organization (JSSEO) Standard Event Test Readiness Report Template (TR 2004-016) is a companion to this template.</b>					
14. ABSTRACT <b>This document is a template for Test Plans that were used for Joint Single Integrated Air Picture (SIAP) System Engineering Organization (JSSEO) Test Events. The main purpose of a Test Plan is to ensure that the objectives have been clearly defined and that the correct data will be collected to support these objectives, experiments, and follow-on analyses. The Test Plan establishes the test's objectives, the test's design, organizational and individual roles and responsibilities, analysis method, and the schedule to secure all resources and assets required to conduct the test. A Test Plan is updated prior to the event by a Test Readiness Report which documents that all necessary preparations for conducting the test have been completed. In addition to specifying the structure and formatting of the Test Plan, this template also provides some content instructions and examples.</b>					
15. SUBJECT TERMS <b>SIAP, Test Plan, Template</b>					
16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT <b>Same as Report (SAR)</b>	18. NUMBER OF PAGES <b>54</b>	19a. NAME OF RESPONSIBLE PERSON
a. REPORT <b>unclassified</b>	b. ABSTRACT <b>unclassified</b>	c. THIS PAGE <b>unclassified</b>			

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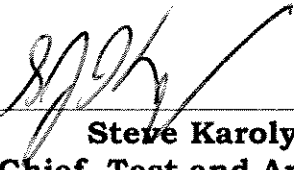
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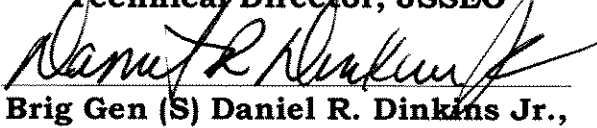
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Steve Karoly,  
Chief, Test and Analysis  
Division, JSSEO

  
Col Harry Dutchyshyn,  
USAF  
Deputy Director, JSSEO

  
CAPT Jeffery W. Wilson,  
USN

Technical Director, JSSEO  
  
Brig Gen (S) Daniel R. Dinkins Jr.,  
USAF  
Director, JSSEO



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**STANDARD TEST PLAN TEMPLATE**

**Joint Single Integrated Air Picture (SIAP)  
System Engineering Organization (JSSEO)  
Name of Event  
Test Plan**

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**Approved by:**

Note: The Director, JSSEO, or a designated representative, will be the approval authority for all test plans to ensure leadership concurs with the test plan. Additional approval signatories will be established as appropriate based on the scope, complexity, level of visibility, and participants in the test event.

\_\_\_\_\_  
**JSSEO  
Name of Primary Point of Contact**

**Notional**

\_\_\_\_\_  
**Date**

\_\_\_\_\_  
**Approval Agency (e.g., JTAMDO, JFCOM)  
Name of Primary Point of Contact**

\_\_\_\_\_  
**Date**

\_\_\_\_\_  
**Approval Agency (e.g., JITC)  
Name of Primary Point of Contact**

\_\_\_\_\_  
**Date**

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**STANDARD TEST PLAN TEMPLATE**

**Joint Single Integrated Air Picture (SIAP)  
System Engineering Organization (JSSEO)  
Name of Event  
Test Plan**

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**Submitted By:**

---

**Test Director**

---

**Date**

**Name of Test Director (Organization) (M&S venues)**

**Reviewed By:**

Normally the SIAP Analysis Team Executive Steering Group (SAT ESG) will review the Test Plan. Additionally, a cognizant representative from each participating organization shall review the Test Plan. Signature by the reviewer indicates that his organization agrees to its role in the test event as described in the Test Plan.

---

**Reviewal Agency (e.g., E-2C)**

---

**Date**

**Name of Primary Point of Contact**

---

**Reviewal Agency (e.g., E-2C)**

---

**Date**

**Name of Primary Point of Contact**

**Notional**

---

**SAT ESG Co-Chair (JSSEO)**

---

**Date**

**Name of Co-Chair**

---

**SAT ESG Co-Chair (USJFCOM)**

---

**Date**

**Name of Co-Chair**

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## EXECUTIVE SUMMARY

This document is a template for a Test Plan that is applicable to Joint Single Integrated Air Picture (SIAP) System Engineering Organization (JSSEO) Test Events. In the conduct of live events, Hardware-in-the-loop (HWIL) simulation-driven exercises, or constructive models and simulation analysis, data will be collected to support JSSEO objectives. The main purpose of a test plan is to ensure that the objectives have been clearly defined and that the correct data will be collected to support these JSSEO objectives, experiments, and follow-on analyses.

The planning documentation for a particular test will include 1) the Test Plan outlined in this template and, 2) a Test Readiness Report, which is outlined in the Standard Test Readiness Report Template TR 2004-016. The Test Plan establishes the test objectives, organizational and individual roles and responsibilities, and schedule to secure all resources and assets required to conduct the test. The Test Readiness Report is an update to the Test Plan and ensures that all steps necessary to commence the test event are complete. The Test Readiness Report is presented to the designated approval authorities at the Test Readiness Review with Go/No-Go criteria established for determining readiness. Approval authority signature on the Test Readiness Report indicates agreement with the report and authorization to conduct the test.

The test planning process includes

1. Identifying the test objectives
2. Ensuring that the necessary operational conditions are met
3. Describing the roles and responsibilities
4. Describing the Verification, Validation, and Accreditation efforts for simulations
5. Planning post-event analysis
6. Developing a schedule for planning, executing, analysis and reporting.

This template attempts to address all types of tests envisioned. However, certain sections are not applicable to all types of tests, so this template should be tailored depending on the type of event.

**In the Executive Summary of the Test Plan, provide a summary of essential information regarding the testing/simulation event. Include high-level objectives, dates and location of the event and how the results will be used.**

## **STYLE AND FORMATTING GUIDELINES**

This test plan template has specific style types built into it to allow common formatting across test plans. Headings are defined as first order, second order, third order, and so on; or, as number one, number two, and number three. There should seldom be a number four heading. These heading styles are called "Heading 1, Head 1," "Heading 2, Head 2," "Heading 3, Head 3," and "Heading 4, Head 4." They are of Bookman Old Style font, are boldface, and not underlined. Numbering goes as 1., 1.1, 1.1.1, etc.

Figure captions use the style "Caption." Table titles use the style "Table Center." Appendix titles use the style "Annex."

Updating Table of Contents, List of Figures, List of Tables, and List of Appendices is done using the following steps:

- a) Identify the table or list you wish to update and right-click inside it.
- b) Select "Update field."
- c) If you want to update the table headers AND pages numbers, select "Update entire table." If you want to just update page numbers, select "Update page numbers only."

In accordance with the JSSEO configuration management policy, the footer of the document should have the following format:

WBS number\_Test Plan (Document Control Number)\_Version  
Number\_JSSEO\_YYMMDD

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## **1. INTRODUCTION**

### **1.1 Background**

Discuss the significant events, developments, findings, and/or management decisions that led to this test being conducted. Reference should be made to previous related tests, problems found during operational use, significant historical data, major focus areas, and capabilities of the testing/simulation process, as appropriate. Include topics such as:

1. Dates of Significant Milestones
2. Origin
3. Process
4. Timeframe and Priorities
5. Location
6. Environment

### **1.2 Purpose of Test**

Succinctly state the top-level purpose of the test. Identify the customer for the test results. Describe the final product of the test (i.e., the deliverable) and how the customer will use it.

### **1.3 Scope of Test**

Identify the top-level test objectives, hypotheses, test description, and instrumentation. Identify the participating organizations, test elements, and assessment constraints and limitations.

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## **2. OVERALL TEST DESIGN**

### **2.1 Concept of Test Operations**

Describe the general test approach along with the specific methodologies and techniques used by the test team to plan, organize, and manage the testing activity. The test design should perform the following functions:

1. Structure and organize the approach to testing in terms of specific test objectives;
2. Identify key measures of performance (MOPs);
3. Identify the required data and demonstrate how the data will be gathered, stored, analyzed, and used;
4. Indicate what part modeling and simulation will play in meeting test objectives;
5. Identify the number and type of test events and required resources.

### **2.2 Brief Experiment Description**

Specify the test objectives, events, and analysis requirements.

#### **2.2.1 Experiment Objectives**

Identify objectives; include any sub-objectives.

#### **2.2.2 Experiment Hypothesis**

Identify the hypothesis for the experiment that is to be proved or disproved.

#### **2.2.3 Attributes and MOPs Measured**

Briefly describe the parameters or outputs that will be used to evaluate system performance. MOPs should be short definitive statements beginning with an action verb (e.g., “measure” or “calculate”).

#### **2.2.4 Data Management and Success Criteria**

Summarize data and instrumentation requirements and data management strategy. A detailed Data Management and Analysis Plan will be provided as an appendix to the Test Readiness Report.

For the data requirements listed, identify a process for determining that data has been properly collected. (Did the test go as planned? Was data collection successful? Is data quality sufficient for post-event analysis? Is more

or supplemental data needed? EOIs identified and packaged for analysis? TORs collected? Media/tapes set for next operation?) .

### **2.2.5 Test Methodology**

Describe test methodology and procedures to safely and efficiently acquire the appropriate information to correctly calculate the MOP.

#### **2.2.5.1 Baseline Experiment**

Describe how a baseline for Critical Experiments will be established.

For example: "The first set of runs will support establishing a baseline for the E-2C SIAP performance. Two runs will be taken to ensure that the data between the two runs produces similar SIAP results and that the process is repeatable. SIAP attributes will be calculated for these runs and will be used as the standard bearer against which all parametric analysis will be compared. It is expected that both operator/analyst observations and the SIAP attributes will reflect a minimum of differences between the two runs. If repeatable baseline runs are not achieved, parametric runs will not be conducted until the cause for lack of repeatability is determined and fixed."

### **2.2.6 Requisites**

Identify the operational context required to properly collect the data for the experiment. Include number and types of units required. Identify Go/No-Go criteria for conducting the event. For Models and Simulations, identify specific modeling capabilities that are essential to meeting test objectives.

### **2.2.7 Data Reduction and Analysis Method**

Identify the data reduction process, including tools used, how the data will be used and by whom, and how the data will be provided to analysis team. Describe the analysis method, including description of tools/algorithms for conducting analysis.

### **2.2.8 Analysis Team**

List the analysis team lead and key team members. Include their roles in the event and contact information.

### **2.2.9 Reporting Schedule**

Include the schedule for conducting the analysis, and identify any constraints or contingencies on delivering the report.

### **2.3 Additional Experiments**

If the test includes multiple experiments, describe the first critical experiment in section 2.2, then add sections 2.3, 2.4,..., 2.n as necessary for each of n critical experiments. Follow the format of section 2.2 for these additional sections.

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### 3. MODELING AND SIMULATION (M&S Venues)

#### 3.1 Federation Design

Include an overview of the components, interfaces, systems' roles in the federation, how they are implemented, and any support elements (Figure 1). List each federate and document further detail for each. A more detailed discussion of federation development should be provided in a separate appendix to the Test Readiness Report.

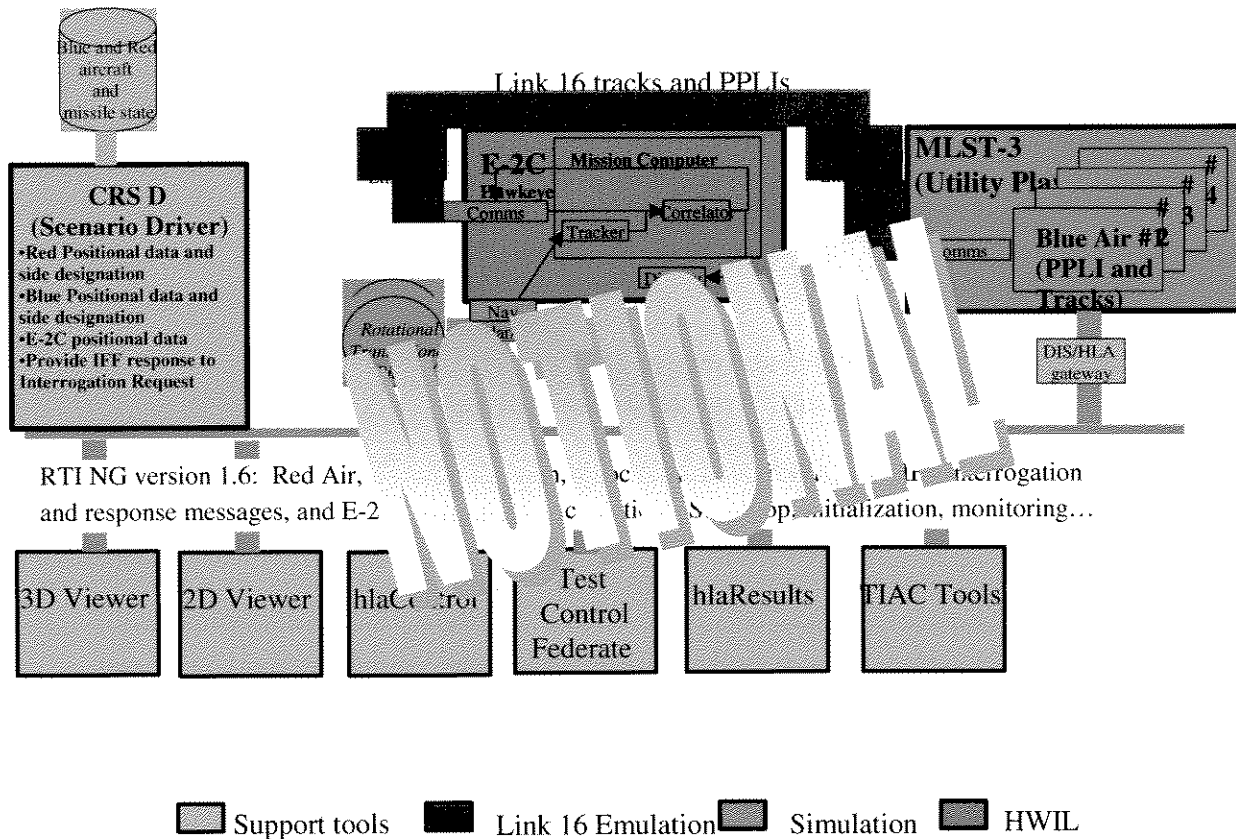


Figure 1. Notional Federation Design

#### 3.2 Federate Roles

##### 3.2.1 Federate Name (e.g., E-2C Federate, ESTEL)

Provide a functional description of the Federates that will be used during the event.

*Role in Federation:*

- State federate's role(s) in the federation.

- For example: Simulates E-2C APS-145 radar, IFF interrogator/transponder, and navigational systems.

*Constraints/Limitations*

- State federate's constraints/limitations.

*Implementation:*

- State federate's implementation.
- For example: AN/APS-145 Radar is simulated using RISS.

*Federation Verification, Validation, and Accreditation (VV&A):*

- State pertinent VV&A information.

### **3.2.2 Support Federates**

Identify and describe support federates required for the event. For example:

*Test Control*

- Adapted from Navy Infrastructure (NI) effort.
- Provides federation start/stop and monitoring.

*hlaResults® Version 2.0*

- Commercial product to collect data in federation and play back data.

### **3.2.3 Supporting Tools**

Identify and describe supporting tools that are required for the event. For example:

*Command, Control, Communication, and Intelligence (C3I) Engineering and Evaluation System (CEES)*

- Interoperability tool developed by Redondo Systems, Inc.
- Monitors and collects TADIL J and DIS truth data.

*Joint Analysis Display Environment (JADE)*

- Three-dimensional quick-look tool during runs.
- Monitors and collects TADIL J and HLA truth data.
- Post-mission three dimensional (3D) replay capability.

Tactical Office (TACO)

- Three-dimensional quick-look tool during test runs.
- Monitors and collects ECS, ICC, TADIL J, and DIS truth data.
- Post-mission 2D replay capability.

Performance Evaluation Tool (PET)

- Metrics evaluation tool developed by NSWC Corona.
- Incorporates ECS, ICC, TADIL J, and HLA truth data.
- Post-mission 2D replay capability.
- Seamless interoperation with ARCTIC.

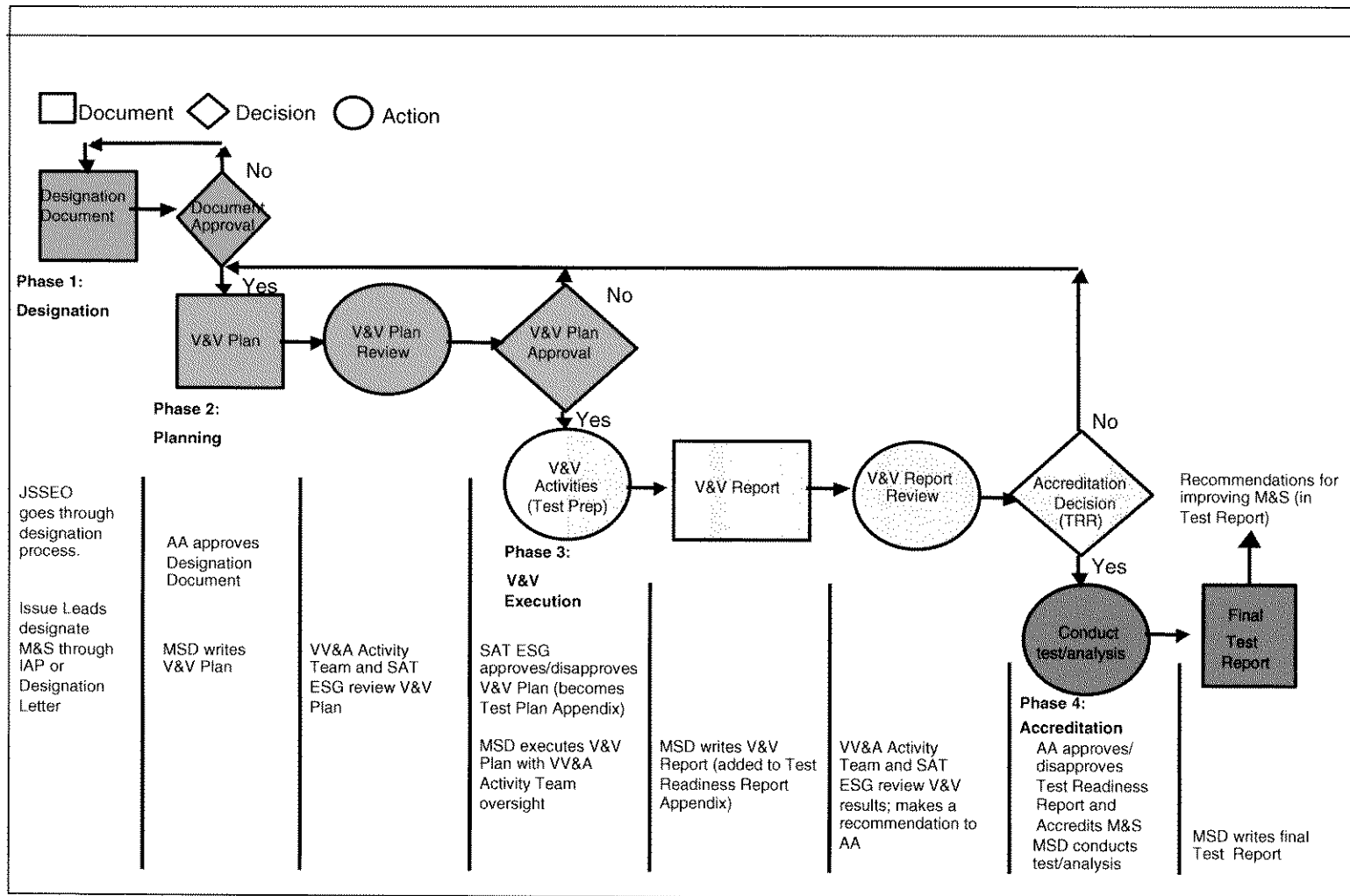
Automatic Reconstruction and Correlation Tool for Interoperability Characterization (ARCTIC)

- Performs Automatic Truth to System track matching.
- Seamless interoperation with PET.
- Flexible/tailorable to all types of system data.

### **3.3 M&S Verification, Validation, and Accreditation (VV&A) Process**

Verification, Validation, and Accreditation (VV&A) is required to determine that a simulation or federation of simulations is appropriate to use for a particular test objective. Models and simulations must be accredited for their intended use.

The test plan should include the V&V process diagram from the JSSEO Technical Report on M&S VV&A (TR 2003-006) shown in Figure 2 that discusses how JSSEO is charged with providing recommendations to decision authorities in the Office of Secretary of Defense (OSD) and Joint Staff on how to achieve SIAP-related requirements across all Services and Agencies. These recommendations must be reviewed by the affected Services and Agencies in order to achieve consensus on their implementation.



AA = Accreditation  
MSD = M&S Developer

Figure 2. JSSEO VV&A Process

The VV&A process includes development of a V&V plan for each of the federates and the overall federation itself. The purpose of the VV&A Plan is to describe how the test team applies the VV&A process and procedures to meet the VV&A needs. For each Federate or M&S, there will be a section dedicated to its specific V&V plan. All VV&A Plans shall reside in a V&V document separate from this Test Plan. This Test Plan, however, shall identify (Table 1) those federates requiring a V&V plan and the corresponding lead for each plan. Table 2 gives a schedule of the VV&A process for this test.

Table 1. Federates Requiring V&amp;V Plan

Federate requiring V&V Plan	Responsible Party(ies)	
	Primary	Secondary
Overall Federation - Utility Player - PATRIOT Sim Interface - CRS-D - Tools (TIAC, JACE, CEES, TACO)	Primary Responsible Party	Secondary Responsible Party
Utility Player - GTE 1553 - DLS - TIAC/HLA	Primary Responsible Party	Secondary Responsible Party
PATRIOT Sim Interface - GTE X.25 - FMS-D	Primary Responsible Party	Secondary Responsible Party
CRS-D - CRS	Primary Responsible Party	Secondary Responsible Party

Table 2. V&amp;V Schedule

Date	Action
10 Mar 04	All V&V plans delivered to Maj. Borowsky
10-14 Mar 04	V&V Activity team* review of V&V plans. Borowsky provides approval of plans.
19 Mar 04	Status update in H... ing preliminary V&V reports.
7 Apr 04	Telecon following dry run of V&V report. Maj. Borowsky provides recommendations to SAT ESG prior to TRR to accredit or not accredit.
9 Apr 04	Test Readiness Review and accreditation.

\*V&V Action team: The VV&A Action Team is an ad hoc team of SMEs, Model/Tool developers/experts, Service representatives and other specialists. It will normally be established as part of the Test Plan Working Group. Provide team members and representatives from each organization and identify their associated organizations.

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#### 4. TEST SCHEDULE

Present the overall test schedule, in accordance with the project schedule, from event kickoff to delivery of the final report. Show the schedule of events in list or timeline format (Gantt chart, see Figure 3). Include any significant pre- and post-test requirements.

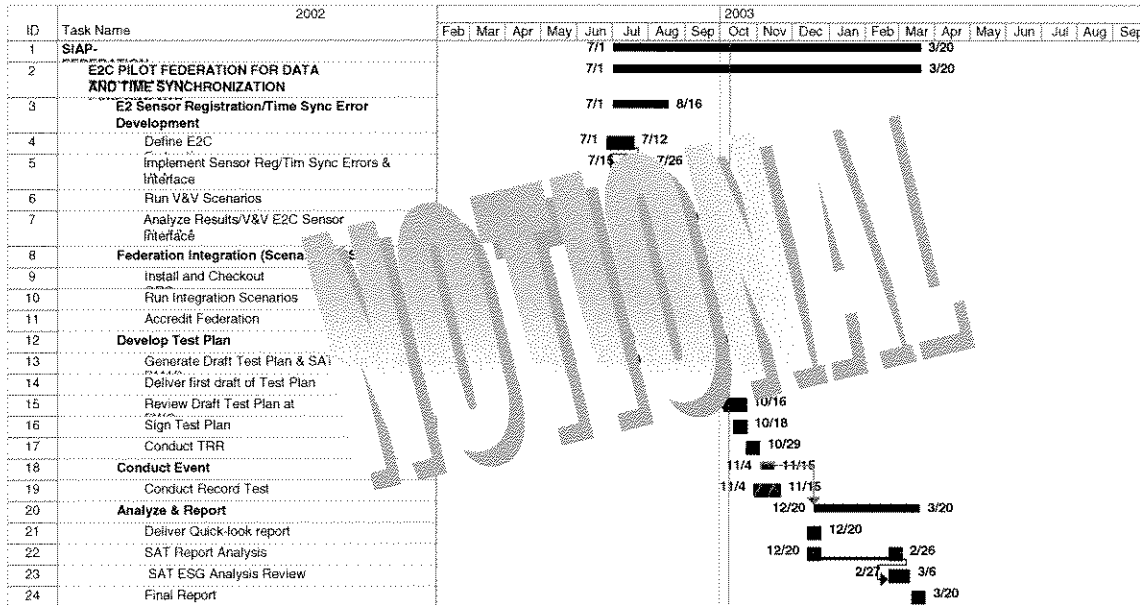


Figure 3. Notional Schedule

Because the Test Plan is written and approved well in advance of the Test Readiness Review, many of the tasks necessary to commence the test event will be incomplete when the Test Plan is approved. For those tasks to be completed after the Test Plan is approved, provide a closure plan in sufficient detail to be actionable, and identify by name the person responsible for completing the action.

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## 5. TEST MANAGEMENT AND ORGANIZATION

### 5.1 Roles and Responsibilities

Provide an organizational diagram for conducting the test. Figure 4 provides a notional organization of an event.

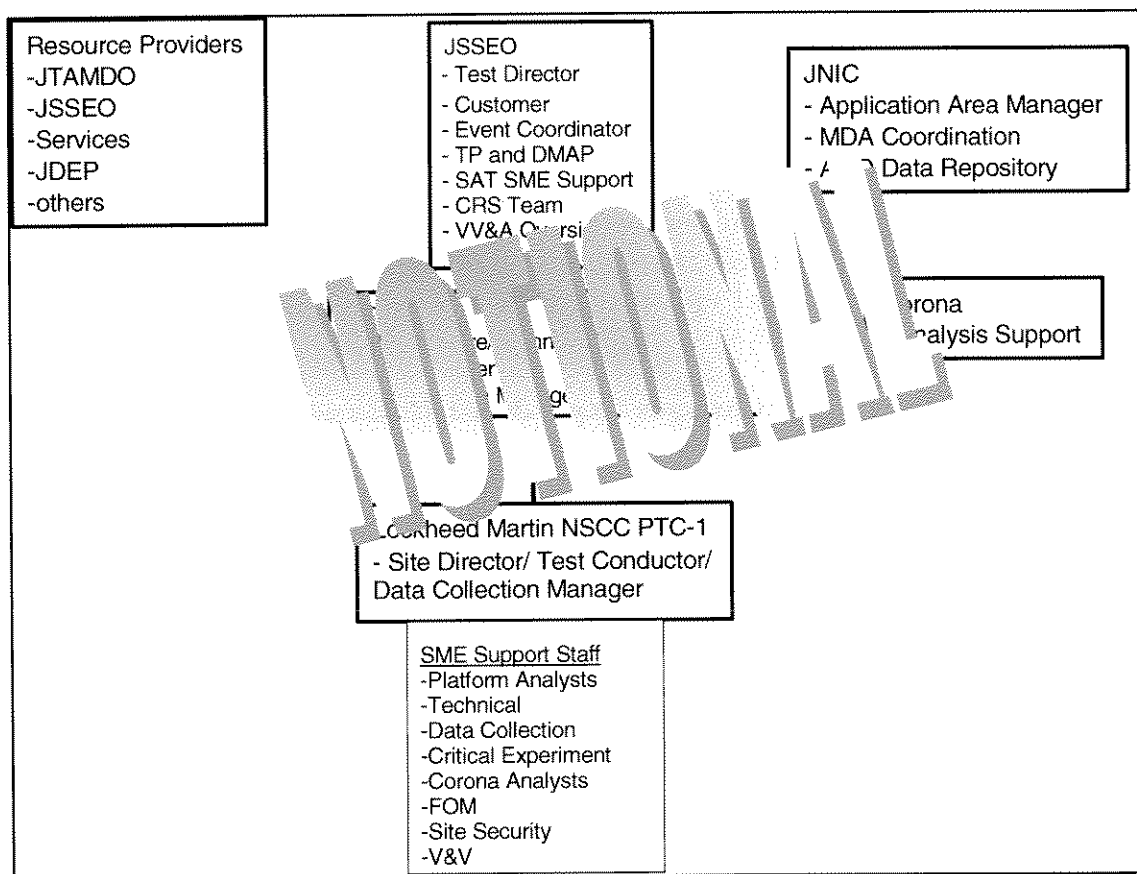


Figure 4. Notional Organization of an M&S Event

Discuss the specific roles and responsibilities for each organization. For each organization, identify key point(s) of contact, including contact information.

#### 5.1.1 Customer (e.g., JSSEO)

The customer is the primary user of the test results.

The customer:

- Has primary responsibility for marshalling funding resources
- Describes the expected level of support for the event
- Provides some resources for the event

- Coordinates the event
- Oversees overall planning, conduct, and analysis of event
- Coordinates test plan development and data management and analysis plan
- Provides guidance on critical experiments via subject matter experts
- Develops the CRS excursion
- Provides the V&V process
- Has final accreditation authority for the event.

#### **5.1.2 Test Sponsor Name (e.g., Joint Theater Air and Missile Defense Organization, JTAMDO)**

The Test Sponsor is a resource provider and endorses the scope and goals of a project and represents the test throughout the management process. The Test Sponsor exercises approval authority over Test Objectives/Plans/Results.

#### **5.1.3 Application Area Manager (e.g., Joint National Integration Center, JNIC) (M&S Venues)**

The Application Area Manager provides technical environment support services, maintains visibility over a family of systems, and oversees test requirements.

The Application Area Manager:

- Reviews, evaluates test objectives, plans, analyses, and reports
- Participates in event planning, execution, data collection, and analysis
- Provides insight for other test activities and applications to the broader testing community

#### **5.1.4 Infrastructure/Technical Manager (e.g., Joint Interoperability Test Command (JITC)) (M&S Venues)**

The Infrastructure/Technical Manager is responsible for developing the federation.

The Infrastructure/Technical Manager:

- Develops and executes a V&V plan for the Utility Player.
- Is the Configuration Manager with the responsibility for ensuring that the FOM is configured properly and computer program versions used are documented
- Coordinates and maintains the Federation Agreements and coordinates FOM changes

- Will provide technical assistance, if requested, to issues involving HLA federate design or the RTI.

#### **5.1.5 Participating Service(s) (e.g., Lower Tier Project Office/Software Engineering Directorate (LTPO/SED))**

Identify the participating Service(s) for this event.

Participating Services will:

- Develop test procedures for conducting experiments
- Conduct V&V of their federate components in the test (M&S venues)
- Execute test runs
- Provide Subject Matter Experts to ensure test objectives are properly addressed
- Develop final technical reports of analysis and findings

#### **5.1.6 Supporting Agencies (e.g., Naval Surface Warfare Center (NSWC Corona))**

Identify roles and responsibilities of Supporting Agencies.

Supporting Agencies:

- Ensure that the test(s) accurately capture program attributes
- Provide on-site analysis, as necessary.

#### **5.1.7 SIAP Analysis Team (SAT): Executive Steering Group (ESG) and Other Test Representatives**

Identify the SAT ESG members associated with the subject test and their intended roles and responsibilities. Include statements regarding whether the SAT ESG is expected to provide the resources necessary to plan, execute, and analyze an event.

It is the responsibility of SAT members to ensure the right tools are brought to collect necessary data and perform on-site analysis.

The SAT ESG also has a major role in the Verification, Validation and Accreditation Process, outlined in TR 2003-006 (M&S venues). It will be responsible for making a recommendation to accredit the federation.

#### **5.1.8 SIAP Common Reference Scenarios (CRS) Team**

Identify the CRS team that will be responsible for developing CRS excursions that reflect the needs of the event.

The SIAP CRS Team will:

- Develop the scenario with elements and formats consistent with the FOM
- Ensure the scenario contains the appropriate requisites to conduct experiments
- Provide data required to conduct test.

#### **5.2 On-site Organization**

Identify the on-site activity management personnel and their roles. Identify one overall leader and assistant managers (one for SIAP Analysis Team (SAT), one for critical experiments, and others as necessary for additional test areas).

Identify the SAT on-site objectives such as mission monitoring, events of interest investigating, and root-cause analysis activities. The SAT members should participate in the de-brief process and interact with operators whenever possible to address SIAP issues.

Identify the Test Observation Report (TOR) Manager. Discuss the TOR process that will be followed for capturing SIAP-related issues. This process should include adjudication practices to be used.

Provide a table that lists key on-site test execution and analysis personnel, their roles, the system or agency they represent, and their contact information. As appropriate, identify individuals who are providing analysis tools, and the associated logistics information.

## **6. REPORTING**

### **6.1 Test Readiness Report**

The Test Readiness Report updates the Test Plan and is presented to the designated approval authorities at the Test Readiness Review. The Test Readiness Report for an event follows the guidelines provided in the Standard Event Test Readiness Report Template, TR-2004-16. The purpose of the Test Readiness Review includes 1) a review of the test objectives, methods, data collection and analysis plan, individuals' roles and responsibilities, and Go/No-Go criteria, and 2) evidence to the approval authorities that all preparations for the test are complete and the test can be completed with a high likelihood of success. Approval signature on the Test Readiness Report indicates agreement with the report and authorization to conduct the test.

### **6.2 Quick-Look Report**

Identify the organization(s) responsible for producing and/or reviewing the quick-look report(s). Quick-look reports shall be submitted to JSSEO within 30 calendar days of completing the test event. Following the test event, each organization submitting a quick-look report should report their preliminary findings as they relate to the test objectives. Any additional findings of significance, especially as they relate to the SIAP Attributes, should also be reported. Preliminary conclusions and recommendations as they relate to the test objectives should be included as appropriate.

### **6.3 Technical Report Development**

Identify organization(s) responsible for producing and/or reviewing the final report. Set the timeline for submission. Establish the coordination process, through final approval authority. State expected format for the final report. For example: "A technical report will be generated within 90 days following completion of the E-2C JDEP event. Generating the report will be a collaborative effort. Final signature will be provided by JSSEO, JTAMDO, JNIC, JITC, and E-2C." Table 3 gives the planned schedule for the reporting process.

Table 3. Reporting Timeline Requirements

<b>Description</b>	<b>Responsible Party(ies)</b>	<b>Date</b>
Quick-look report		NLT 30 days after Test Event
Review of final results		NLT 45 days after Test Event
Review and comment		NLT 60 days after Test Event
Final Technical Report signed		NLT 90 days after Test Event

## **7. REFERENCES**

List all relevant references to the document.

*Theater Air and Missile Defense Capstone Requirements Document (TAMD CRD).* (2001, March). U.S. Joint Forces Command.

*Combat Identification Capstone Requirements Document (CID CRD),* (2001) U.S. Joint Forces Command.

*SIAP SE TF Technical Report 2003-029: Single Integrated Air Picture (SIAP) Attributes Ver. 2.0,* (2003, August). Arlington, VA: JSSEO.

*SIAP SE TF Technical Report 2001-003: Single Integrated Air Picture (SIAP) Metrics Implementation,* (2001, October). Arlington, VA: JSSEO.

*SIAP Standard Data Management and Analysis Plan, Version 1.1,* (2002, July). Arlington, VA: JSSEO.

*SIAP Common Reference Scenario Technical Report, Version 1.1,* (2002, July). Arlington, VA: JSSEO.

*SIAP TF Technical Report 2003-006: Single Integrated Air Picture (SIAP) Verification, Validation, and Accreditation Guide for Models and Simulations.* (2003, February). Arlington, VA: JSSEO.

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**APPENDIX A: ACRONYMS**

List all acronyms in the document. A standard set of frequently used acronyms is provided here and should be tailored for the event test plan.

AA	Accreditation Authority
ABT	Air-Breathing Threat
ACM/ACS	Automatic Channel Monitoring/Automatic Channel Select
AEW	Airborne Early Warning
AGC	Automatic Gain Control
ARCTIC	Automated Reconstruction and Correlation Tool for Interoperability Characterization
ASCII	American Standard Code For Information Interchange
CCD	Common Carrier Device
CD	Compact Disk
CEC	Cooperative Engagement Capability
CID	Combat Identification
CNA	Center for Naval Analyses
COTS	Commercial off the Shelf
CRD	Capstone Requirements Document
CRS	Common Reference Scenario
CRSD	Common Reference Scenario Driver
DCN	Document Control Number
DDM	Data Distribution Manager
DEP	Distributed Engineering Plant
DIS	Distributed Interactive Simulation
DISN	Defense Information Services Network
DM	Data Manager
DMAP	Data Management and Analysis Plan
DoDI	Department of Defense Instruction
DPCA	Displaced Phase Center Array
DPG	Defense Planning Guidance
DR	Data Recording/Data Reduction
DX	Data Extraction
ESC/AW	Electronic Systems Center (previously referred to as MASC)
ESG	Executive Steering Group
ESTEL	E-2C Systems Test and Evaluation Laboratory
FOM	Federation Object Model
FoS	Family of Systems
FTP	File Transfer Protocol

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GII	Group II
GIG	Global Information Grid
GPS	Global Positioning System
GRU	Gridlock Reference Unit
GTE	Gateway Terminal Emulator
HLA	High-Level Architecture
HWIL	Hardware in the Loop
IADS	Integrated Air Defense System
IAW	In Accordance With
ICC	Information and Coordination Central
ICD	Interface Control Document
ID	Identification
IFF	Identification Friend or Foe
JCoCaC	Joint Council of Captains and Colonels
JDEP	Joint Distributed Engineering Plant
JIADS	Joint Integrated Air Defense System
JITC	Joint Interoperability Test Command
JNIC	Joint National Integration Center
JSSEO	Joint SIAP System Engineering Organization
JTAMDO	Joint Air and Missile Defense Organization
JTIDS	Joint Tactical Information Distribution System
KPP	Key Performance Parameter
LTPO	Lower Tier Project Office
M&S	Modeling and Simulation
MDA	Missile Defense Agency
MIL-STD	Military Standard
MOE	Measure of Effectiveness
MOP	Measure of Performance
MS	Microsoft
MSD	Modeling and Simulation Developer
MULTOTS	Multiple Unit Link Test and Operations Training System
NAVAIR	Naval Air Systems Command
NI	NAVAIR Infrastructure
NSWC	Naval Surface Warfare Center
OSD	Office of the Secretary of Defense

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PC	Personal Computer
PET	Performance Evaluation Tool
PO	Program Office
POC	Point of Contact
PPLI	Precise Participant Location and Identification
PU	Participating Unit
R2	Reporting Responsibility
RISS	Radar IFF Simulation System
RTI	Runtime Infrastructure
SAT	Single Integrated Air Picture Analysis Team
SE	System Engineer
SED	Software Engineering Directorate
SIAP	Single Integrated Air Picture
SIF	Selective Identification Feature
Sim/Stim	Simulation/Stimulation
SIPRNet	Secret Internet Protocol Router Network
SME	Subject Matter Expert
SoS	System of Systems
SPC	Special Programs Center
SWIL	Software in the Loop
STU	Secure Telephone Unit
TACCAR	Time Averaged Clutter Coherent Airborne Radar
TADIL	Tactical Digital Information Link
TAMD	Theater Air and Missile Defense
TAMD CRD	Theater Air and Missile Defense Capstone Requirements Document
TD	Test Director or Tactical Driver
TDDS	TRAP Data Dissemination System
TF	Task Force
TIAC	Theater Air and Missile Defense Interoperability Assessment Capability
TIBS	Tactical Information Broadcast System
TIM	Terminal Input Message
TO	Test Objective
TOM	Terminal Output Message
TOR	Test Observation Report
TPWG	Test Plan Working Group
TQ	Track Quality
TRAP	Tactical Related Application
TSIU	Tactical System Interface Unit
VV&A	Verification, Validation, and Accreditation

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WAM	Warfare Assessment Model
WASP	Wrap-Around Simulator Processor
WG	Working Group
WST	Weapon Systems Trainer
2D	2 Dimensional
3D	3 Dimensional

## **APPENDIX B: SIAP METRICS**

JSSEO developed a set of attributes (JSSEO Technical Report 2003-029) derived from TAMD and CID CRD key performance parameters. The test plan should describe in this appendix any information that impacts the calculation of the SIAP attributes and any measures of performance. All JSSEO tests should include a SIAP attributes calculation. Any caveats, limitations, or changes from the ordinary to compute them should be mentioned here. For reference, the qualitative definitions of the SIAP attributes are provided as follows:

Completeness: The measure of the portion of true air objects that are included in the SIAP. The air picture is complete when all objects are detected, tracked and reported.

Clarity: The measure of the portion of the SIAP that contains ambiguous tracks and/or spurious tracks. The air picture is clear when it does not include ambiguous or spurious tracks.

Continuity: The measure of how accurately the SIAP maintains track numbers over time. The air picture is continuous when the track number assigned to an object does not change.

Kinematic Accuracy: The measure of how accurately the TAMD Family of Systems (FoS) reports track position and velocity. The air picture is kinematically accurate when the position and velocity of each assigned track agree with the position and velocity of the associated object.

ID Completeness: The measure of the portion of tracked objects that are in an identified state. The ID is complete when all tracked objects are in an identified state.

ID Correctness: The measure of the portion of tracked objects that are in the correct ID state. The ID is correct when all tracked objects are in the correct ID state.

ID Clarity: The measure of the portion of tracked objects that are unambiguously identified. The ID is clear if no tracked object is in the ambiguous ID state.

Commonality: The measure of consistency of the air picture held by TAMD FoS participants. The air picture is common when the assigned tracks held by each participant have the same track number, position, and ID.

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The actual attribute computations will be automated through the use of the Performance Evaluation Tool (PET), into which the algorithms for the SIAP attributes have been encoded.

## APPENDIX C: FEDERATION DEVELOPMENT PROCESS (M&S VENUES)

### Federation Development and Execution Process (FEDEP)

The development of the federation designed to support this test follows the seven-step FEDEP process, which is now an IEEE standard process. This process provides the framework for the action plan and development schedule (Figure C-1). The steps in this process are shown in Figure C-1.

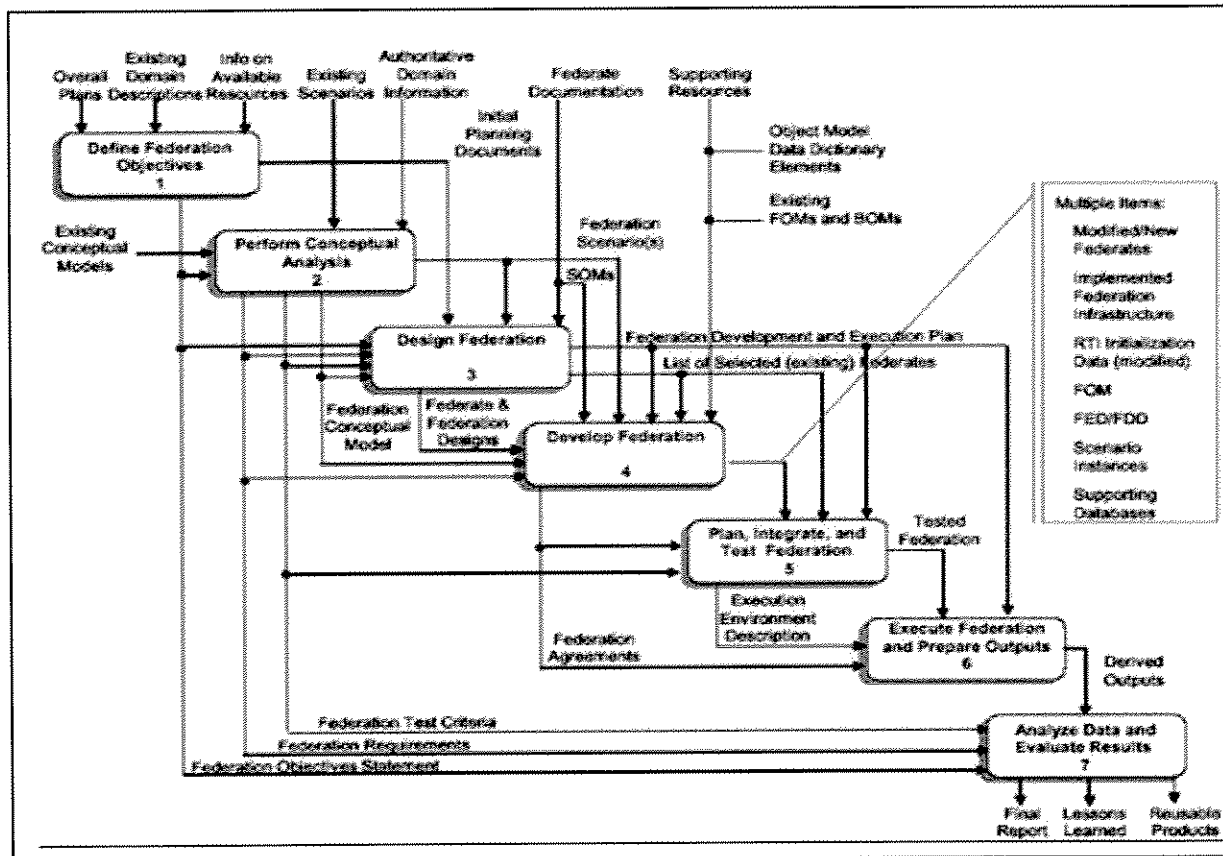


Figure C-1. Federation development and execution process

#### Step 1. Define Federation Objectives

The first step in this process is to clearly define the federation objectives. This is key because all subsequent steps build on the objectives. This federation is designed specifically to provide the environment to support the stated test objectives in time synchronization and data registration experimentation.

**Step 2. Perform Conceptual Analysis**

The next step is to define characteristics of federates and the federation needed to address issues. Of particular importance in this test is credibility of the scenario and its appropriateness as a context for the analysis (sufficient numbers and positions of friendly and enemy forces). Equally important are the characteristics of the sensor representation in terms of its ability to adequately represent the actual system, and the inputs needed from friendly forces (PPLI, IFF, remote tracks) to provide the environment needed for the test. These federation requirements drive the selection of federates and the VV&A of the federation. This step requires active participation of the subject matter experts and the system owners/proponents since it is dependent on a sound understanding of the problem area, the substantive issues to be addressed in the test, and requirements for selection of the representations to meet the needs of the test.

**Step 3. Design Federation**

The next step is to identify specific federates, develop the Federation Object Model (FOM) for the federation, define federation CONOPS, and delineate federate upgrades to support the federation. The federation design reflects the decision of how to satisfy the federation requirements with specific federates, scenarios and data exchanges. At this stage it is almost always necessary to return to steps 1 and 2. It may be necessary review the objectives for clarity and return to the conceptual analysis with more detail to ensure the requirements for the federation are well articulated and understood, the federation can be designed to meet the needs of the user.

**Step 4. Develop Federation**

Next, federate owners implement support for the FOM and enhancements in federates as needed and test individual federates.

**Step 5. Plan, Integrate, and Test Federation**

Incremental testing of federation capabilities and sets of federates is completed to prepare for the federation execution to support the test.

**Step 6. Execute Federation and Prepare Outputs**

The test is then conducted using the federation following the test process and procedures.

### **Step 7. Analyze Data and Evaluate Results**

The final step is to conduct the data analysis, evaluate results, and produce the final report.

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**APPENDIX D: POINTS OF CONTACT**

Identify names of participants and their roles in the event. Provide contact information.

Table D-1. Participants in the JDEP Planning

<b>Name</b>	<b>Organization</b>	<b>Phone</b>	<b>Email</b>
Last name, First Name	Company, Office Symbol		

Table D-2. Test Directors/Site Test Directors

<b>Site</b>	<b>TD / Site TD</b>	<b>Phone</b>	<b>Email</b>
For example: "Test Director (Primary)"			
For example: "NAWC-AD (E2C)"			
For example: "Data Distribution Manager"			
For example: "Data Collection Manager"			

Table D-3. Data Collection Team

<b>System</b>	<b>Location</b>	<b>Title/Organization</b>	<b>Name</b>	<b>Phone</b>	<b>Email</b>
For example: "REPOSITORY"	For example: "NAVSEA Corona, CA"	For example: "DX Coordinator, NAVSEA Corona"			

Table D-4. Site Leads/POCs

<b>Site</b>	<b>Primary/Alternate</b>	<b>Site POC</b>	<b>Phone</b>	<b>E-Mail</b>
For example, "NAWC-AD (E-2C)"	Primary			
	Alternate			

Table D-5. Lead Analysts

System	POC	Phone	Email